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AUTHOR	Ellis, Susanne D.; Mulvey, Patrick J.
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ABSTRACT

Periodic revisions of the physics and astronomy curricula have been made to make scientific course-work more appealing to a greater number of college students and ultimately create a more positive image of these disciplines. This report, in an attempt to determine how effective these revisions have been, provides 13 tables and 3 figures of trend data concerning enrollment in introductory physics and astronomy courses and the numbers of degrees conferred in these disciplines. Several tables present 5- or 10-year trend data. Tables include data such as the numbers of institutions granting physics degrees by highest degree offered, numbers of physics enrollments and degrees awarded by academic year from 1981 to 1993, graduate enrollments and degrees by institution type from 1981 to 1993, first-time enrollments in a physics course for 1992-93, undergraduate attrition figures by type of institution comparing the academic years 1978-79 to 1991-92, and undergraduate physics majors by geographic region and type of institution. Foreign student enrollment numbers and trends are also presented as well as recipient breakdowns, by degree awarded, of minority and foreign students for the 1991-92 academic year. (GLR)

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AMERICAN INSTITUTE OF PHYSICS
335 East 45th Street
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EDUCATION & EMPLOYMENT
STATISTICS DIVISION

Tel. 212-661-9404

by Susanne D. Ellis
Patrick J. Mulvey

AIP Pub. No. R-151.30

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ENROLLMENTS AND DEGREES

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The broad training associated with a physics education in the United States accounts for the numerous contributions physicists make to society at all levels. Their involvements are wide ranging and include attention to such problem areas as finding ways to improve the scientific literacy of the general public. In order to understand the state of physics education, one might begin with a thorough evaluation of it, which calls for the need to consult a reliable data base. The survey of Enrollments and Degrees, conducted annually for three decades, provides pertinent data that include enrollments in introductory-level physics courses. Our trend data reflect periodic revisions of the curricula that were aimed at making scientific course-work more appealing to a greater number of students and ultimately create a more positive image of physics. To determine how effective the revisions were, one can examine the enrollment trends for those courses and subsequently set new goals.

All the information for this survey was collected from physics and astronomy departments which are classified according to their highest physics or astronomy degree programs. The 1992 survey requested the undergraduate and graduate enrollments for 1992-93 and the number of degrees that were conferred in 1991-92. To identify and evaluate changes, we present several tables showing five- or ten-year trends. For example, **Table I** reflects changes in the number of institutions over the past five years. Each year, interchanges take place among the three types of institutions whereby existing degree programs may either be expanded to include a higher degree, or the currently-offered degree program may be discontinued if too few students express an interest in it. The increase in doctoral programs from 173 to 178 for the most recent year reflects the expansions of five master's degree programs. The footnote for **Table I** identifies the five institutions that have two physics doctoral programs; in each case, the second one grants an applied physics doctorate.

Table I. Institutions by highest physics degree offered, 1988 to 1993.

Academic year	Doctoral-granting*	Master's-granting	Bachelor's-granting
1988–89	169	89	496
1989–90	171	86	496
1990–91	172	84	491
1991–92	173	83	491
1992–93	178	80	486

**Five of these institutions have two physics doctorate-granting departments. They are Stanford U., U. of CA-Davis, Yale U., Harvard U., and Cornell U.*

Ten-year trends of the four types of physics degrees granted each year are presented in **Figure I.** By making a distinction between a terminal master's degree and one granted enroute to a higher physics degree, we are presenting four trends for three levels of physics degrees. The bachelor's degrees showed their first significant decline in seven years by dropping below the five thousand mark. Among the likely causes for such a drop is an increase in the number of bachelors who believed that a nonphysics degree will make them more marketable, and their double majors facilitated that option. By contrast, the number of graduate degrees increased at each level; an indication that at many universities the funds for research assistantships are limited and graduate students could no longer postpone the completion of their degrees while they waited for the economy to improve. The increase for each type of master's degree was 12%, and the number of doctorates rose by 6%.

Figure I. Physics degrees awarded by academic year, 1981 to 1992.

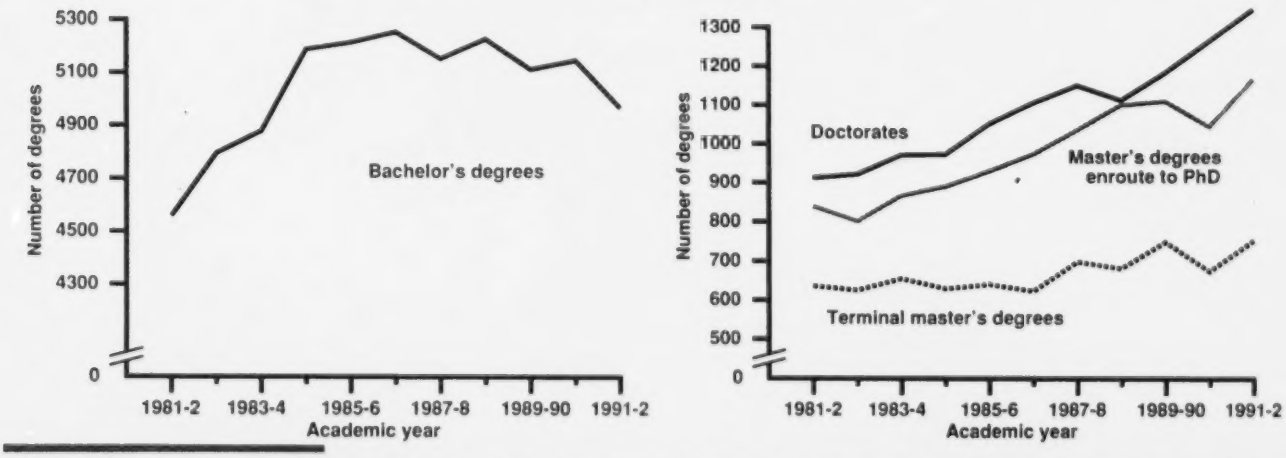

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Table II. Physics enrollments* and degrees awarded by academic year, 1981 to 1993.

Academic year	Number of physics degrees granted (July 1 to June 30)			Undergraduate physics major enrollments		Graduate physics student enrollments	
	Bachelor's	Master's	Doctor's	Juniors	Seniors	Total	1st year
1981–82	4558	1476	912	6386	5372	10 173	2637
1982–83	4795	1426	921	6299	5580	10 429	2630
1983–84	4878	1521	971	6303	5658	10 922	2855
1984–85	5188	1518	972	6601	6009	11 337	2863
1985–86	5214	1589	1051	6689	6092	12 011	2981
1986–87	5253	1596	1105	6592	6119	12 616	3162
1987–88	5152	1733	1150	6412	5959	13 143	3274
1988–89	5226	1781	1112	6390	5914	13 361	3132
1989–90	5111	1857	1183	6313	5896	13 708	3059
1990–91	5145	1718	1264	6445	6031	14 065	3278
1991–92	4965	1918	1346	6435	6126	14 534	3306
1992–93				6287	6130	14 430	3093

**Includes part-time students.*

By adding the undergraduate and graduate enrollment trends to the numerical data of **Figure I,** we have created **Table II.** Noteworthy among these data are the decreases that were recorded for graduate enrollments in 1992-93. The first-year graduate enrollment does show a fluctuation during the late 1980s, but the total number of graduate students had not shown a decline since 1979.

When we divide the institutions into the three types by highest physics degree granted, their data create **Table III,** which represents an expansion of the data in **Table II.** On that basis we can examine separate enrollment trends and degree production for each type of institution. For example, the decreases in both junior physics majors and total graduate enrollments were primarily attributable to the master's

Table III. Undergraduate and graduate enrollments* and degrees by institution type, 1981 to 1993.

Academic year	Number of physics degrees granted (July 1 to June 30)			Undergraduate physics-major enrollments		Graduate physics student enrollments	
	Bachelor's	Master's	Doctor's	Juniors	Seniors	Total	1st year
Doctoral-granting institutions							
1981–82	2179	1281	912	2996	2671	9 273	2275
1982–83	2192	1210	921	2962	2645	9 524	2288
1983–84	2195	1319	971	2955	2824	10 006	2495
1984–85	2460	1286	972	3059	3105	10 357	2443
1985–86	2377	1358	1051	3120	2961	10 937	2574
1986–87	2473	1357	1105	3132	3148	11 389	2667
1987–88	2460	1432	1150	3030	2991	11 880	2737
1988–89	2526	1465	1112	3018	2972	12 069	2638
1989–90	2463	1490	1183	2877	2993	12 440	2623
1990–91	2462	1414	1264	3082	3077	12 700	2782
1991–92	2353	1530	1346	3057	3096	13 118	2831
1992–93				3038	3125	13 222	2688
Master's-granting institutions							
1981–82	532	195		917	734	900	362
1982–83	554	216		877	752	905	342
1983–84	610	202		830	722	916	360
1984–85	658	232		974	781	980	420
1985–86	632	231		1014	865	1 074	407
1986–87	660	239		913	791	1 227	495
1987–88	591	301		871	750	1 263	537
1988–89	582	316		822	795	1 292	494
1989–90	517	367		773	737	1 268	436
1990–91	569	304		800	760	1 365	496
1991–92	545	388		802	765	1 416	475
1992–93				719	724	1 208	405
Bachelor's-granting institutions							
1981–82	1847			2473	1967		
1982–83	2049			2460	2183		
1983–84	2073			2518	2112		
1984–85	2070			2568	2123		
1985–86	2205			2555	2266		
1986–87	2120			2547	2180		
1987–88	2101			2511	2218		
1988–89	2118			2550	2147		
1989–90	2131			2663	2166		
1990–91	2114			2563	2199		
1991–92	2067			2576	2265		
1992–93				2530	2281		

**Includes part-time students.*

Table IV. Number of students enrolling in their first college/university physics course in 1992–93.

Type of course	Type of physics department: Doctoral-granting Calculus-based	Doctoral-granting Algebra-based	Doctoral-granting Non-math.	Nondoctoral-granting Calculus-based	Nondoctoral-granting Algebra-based	Nondoctoral-granting Non-math.	Total Calculus-based	Total Algebra-based	Total Non-math.
Discipline of potential majors							(thousands)		
Engineering majors	66%	2%	–	52%	5%	1%	90.0	4.0	0.4
Physical sciences majors*	16	7	1%	27	8	2	29.0	9.5	1.0
Biology, health-related majors	12	56	6	10	60	5	16.5	72.0	4.3
Other, incl. technology, comp. science, and architecture	6	35	93	11	27	92	11.5	39.5	72.3
	100%	100%	100%	100%	100%	100%			
Numbers in thousands	95	70	33	52	55	45	147.0	125.0	78.0
Total introductory enrollment	198,000			152,000			350,000		
Number of physics departments	177 departments**			566 departments			743 departments		

Includes physics, chemistry, mathematics, etc.
***There are six doctoral-granting institutions that have no undergraduate physics program.*

institutions. At the doctoral institutions, we call attention to the 5% drop in first-year graduate students for which a detailed discussion appears in connection with **Table VII.**

Introductory physics enrollment

Apart from the large group of undergraduates who took an introductory physics course to fulfill a science requirement, we found that approximately one-fifth of the total enrollment, shown in **Table IV,** alluded to students whose intellectual curiosity attracted them to the subject matter of a nonmathematical physics course. This table separates the enrollment at doctoral institutions from that in physics departments that grant only bachelor's and master's degrees and further divides the students by discipline of potential major. The diversity of introductory physics courses is summarized in terms of their mathematical prerequisites, and the trigonometry-based course enrollments were included with algebra-based courses. By adding technology to the list of majors included on the 1992-93 questionnaire we learned that, nationwide, ten thousand students enrolled in algebra-based introductory physics courses to fulfill a requirement for the technology degrees.

Three total columns summarize the enrollments in **Table IV** thereby showing that the engineering majors, who enrolled in calculus-based courses, comprised the largest group followed by the biology or health-related majors. From the last two rows of this table we can calculate how unevenly the students are distributed among the 743 departments.

Undergraduate physics majors

Very few entering freshmen have a clear idea of what majors they will choose. But unless a major in physics is declared early on, the student will find it difficult to complete the number of required courses by the end of the senior year. This scenario lets chairpersons, who monitor the enrollments in lower level physics courses, estimate how many prospective physics majors there are among the freshmen and sophomores. When undergraduates reach the junior year, the great majority of them is required to declare a major. In **Figure II** we combine the collective estimates of freshmen and sophomores, provided by chairpersons, with the actual numbers of juniors and seniors to illustrate the

Figure II. Actual and projected number of undergraduate physics majors.

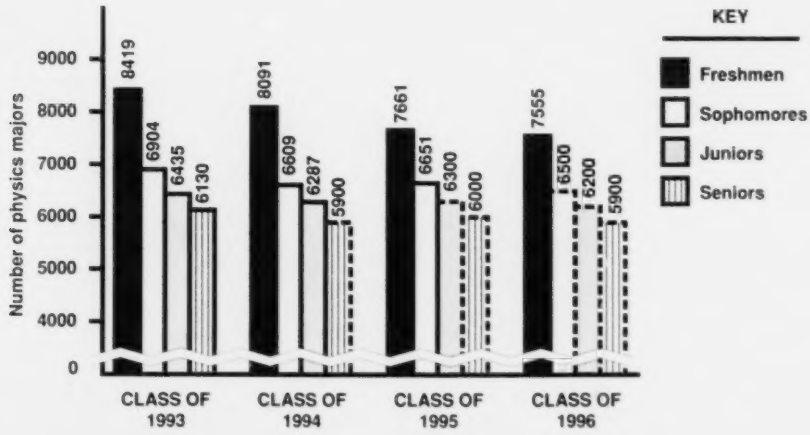

Table V. Attrition of undergraduate physics majors by type of institution, 1978–79 to 1991–92.

Graduating class	Doctoral-granting institution		Master's-granting institution		Bachelor's-granting institution	
	No. of juniors	% Completing bachelor's degree	No. of juniors	% Completing bachelor's degree	No. of juniors	% Completing bachelor's degree
1980	2830	76%	780	74%	2180	80%
1985	2990	78	895	71	2515	84
1990	2980	83	820	69	2540	83
1991	2990	81	800	68	2560	81
1992	3080	80	790	70	2600	80

Note: Number of juniors and bachelor's degrees are based on 3-year averages.

attrition in the form of four sets of bargraphs which represent the classes of 1993 through 1996. Only the class of 1993 consists entirely of reported data; for the remaining three classes we combine actual with projected data to show the kind of attrition we expect among undergraduate physics majors.

A more detailed account of the attrition of undergraduate physics majors is presented in **Table V.** Here we examine what proportion of declared junior physics majors sustain their interest in that discipline long enough to complete a bachelor's degree.and compare these retention rates at three types of institutions. The master's institutions whose class size is the smallest have the lowest retention rates. The 20% attrition at the four-year colleges has proven to be remarkably stable since 1980 while the junior classes increased by 20%. Over a twelve-year period, the doctoral institutions indicated an improved retention rate and a stable enrollment of juniors.

It should be noted that undergraduate physics programs are offered in all regions of the United States as indicated by the distribution of physics majors in **Table VI.** The last column of data labeled Fifth-year undergraduates primarily includes employment-oriented students who changed to a part-time status in order to acquire some experience with the job market before completing their bachelor's degrees. The size of this group had doubled since the early 1980s and a majority of them (61%) were enrolled at the doctoral-granting institutions.

Table VI. Undergraduate physics majors by geographic region and type of institution, 1992–93.

Geographic region*	Estimated** no. of freshmen	Estimated** no. of sophomores	Number of juniors	Number of seniors	Fifth-year undergraduates
New England	552	602	579	536	39
Mid Atlantic	1376	1244	1043	926	123
E. N. Central	1229	1052	926	964	164
W. N. Central	627	546	504	470	115
S. Atlantic	1227	1015	962	881	111
E. S. Central	306	316	353	246	69
W. S. Central	776	580	557	562	104
Mountain	553	481	439	529	213
Pacific	909	815	924	1016	230
Total	7555	6651	6287	6130	1168
Doctoral-granting inst.	2987	2899	3038	3125	720
Master's-granting inst.	963	748	719	724	163
Bachelor's-granting inst.	3605	3004	2530	2281	285

** New England—CT, ME, MA, NH, RI, VT; Middle Atlantic—NJ, NY, PA; East North Central—IL, IN, MI, OH, WI; West North Central—IA, KS, MN, MO, NE, ND, SD; South Atlantic—DE, DC, FL, GA, MD, NC, SC, VA, WV; East South Central—AL, KY, MS, TN; West South Central—AR, LA, OK, TX; Mountain—AZ, CO, ID, MT, NV, NM, UT, WY; Pacific—AK, CA, HI, OR, WA.*
***Estimates of potential physics majors are made by the physics department chairpersons.*

Table VII. Trend in entering U.S. and foreign graduate physics students, 1975 to 1993.

Academic year	No. of first-year graduate students			% foreign students of total
	U.S.	Foreign	Total	
1975–76	2095	551	2646	20.8%
1980–81	1720	844	2564	32.9
1985–86	1721	1260	2981	42.3
1986–87	1799	1363	3162	43.1
1987–88	1944	1330	3274	40.6
1988–89	1825	1307	3132	41.7
1989–90	1724	1335	3059	43.6
1990–91	1890	1388	3278	42.3
1991–92	1903	1403	3306	42.4
1992–93	1753	1340	3093	43.3

Graduate enrollment

For an analysis of the graduate physics enrollment to be meaningful, it needs to include an evaluation of the growing foreign contingent. By focusing on the entering graduate students and extending their enrollment trend back to 1975, we include three data points at five-year intervals in **Table VII** to illustrate several major changes. Between 1975 and 1980, a 4:1 ratio of U.S. to foreign students became a 2:1 ratio. The second five-year period reflects the opening of Mainland China's borders, in 1980, to students who wanted to study in the United States. This influx contributed to a 50% rise in the number of foreign students while the U.S. students remained at the 1700 level. By 1985, when foreign graduate physics students comprised 42%, physics faculty members increased their efforts to attract more graduate students who were U.S. citizens but achieved only a leveling effect as viewed from a 1993 perspective. The most recent enrollment data, describing the fall of 1992, recorded an overall decline of 7% which combined an 8% drop among U.S. students with a 5% decrease among entering foreign students.

For a more detailed look at the changing graduate enrollment, we present **Table VIII,** which focuses on the study status and citizenship of all level graduate physics students at two types of institutions. The master's institutions, offering more limited graduate programs, traditionally served industrial companies in their geographic areas by providing specialized training for employees. The vast majority of foreign students depend heavily on financial support from U.S. universities and few master's institutions are in a position to offer any. However, when in the early 1980s the number of foreign students who entered the U.S. began to increase so rapidly, they exceeded the number of openings for them in doctoral programs. Consequently they applied for admission to those master's institutions that had some assistantships with the intention of transferring after one or two years to pursue a doctorate. Two columns in **Table VIII** show clearly the rising foreign enrollment since 1983 at both types of institutions. By focusing on study status as a characteristic, we find that for the most recent year the total number of part-time students declined by 15% while full-time enrollment leveled off.

Table VIII. Full-time, part-time, and foreign graduate physics enrollments by type of institution, 1983 to 1993.

Academic year	Graduate students at doctoral-granting institutions					Graduate students at master's-granting institutions				
	Full-time	Part-time	Foreign	% foreign of total	Total	Full-time	Part-time	Foreign	% foreign of total	Total
1983–84	9 285	721	3433	34.3%	10 006	569	347	254	27.7%	916
1984–85	9 647	710	3811	36.8	10 357	604	376	293	29.9	980
1985–86	10 119	818	4259	38.9	10 937	620	454	306	28.5	1074
1986–87	10 538	851	4519	39.7	11 389	772	455	397	32.4	1227
1987–88	11 015	865	4813	40.5	11 880	797	466	448	35.5	1263
1988–89	11 182	887	5049	41.8	12 069	830	462	471	36.5	1292
1989–90	11 643	797	5328	42.8	12 440	839	429	454	35.8	1268
1990–91	11 866	834	5334	41.9	12 700	875	490	489	35.8	1365
1991–92	12 172	946	5460	41.6	13 118	912	497	525	37.3	1409
1992–93	12 397	825	5539	41.9	13 222	805	403	417	34.5	1208

Table IX. Regional distribution of U.S. and foreign graduate students by type and control of institution, 1992–93.

Geographic region*		Doctoral-granting institutions				Master's-granting institutions			
		Private		Public		Private		Public	
		No. of grad. students	% foreign of total	No. of grad. students	% foreign of total	No. of grad. students	% foreign of total	No. of grad. students	% foreign of total
New England		1110	49%	410	38%	2	–	77	66%
Mid Atlantic		1271	48	845	66	20	15%	64	17
E. N. Central		401	44	1764	40	46	44	247	45
W. N. Central		86	40	602	45	13	31	71	55
S. Atlantic		419	39	1227	41	34	26	147	31
E. S. Central		54	44	613	34	8	88	54	59
W. S. Central		119	49	1102	43	–	–	118	45
Mountain		52	33	978	37	–	–	39	13
Pacific		480	45	1689	26	–	–	268	10
Total	N	3992		9230		123		1085	
	%		46%		40%		35%		34%

* *New England—CT, ME, MA, NH, RI, VT; Middle Atlantic—NJ, NY, PA; East North Central—IL, IN, MI, OH, WI; West North Central—IA, KS, MN, MO, NE, ND, SD; South Atlantic—DE, DC, FL, GA, MD, NC, SC, VA, WV; East South Central—AL, KY, MS, TN; West South Central—AR, LA, OK, TX; Mountain—AZ, CO, ID, MT, NV, NM, UT, WY; Pacific—AK, CA, HI, OR, WA.*

Given the remarkable increase in foreign graduate physics students, it seems appropriate to present some details on their varying distribution among the graduate programs. Thus **Table IX** presents regional totals for all graduate physics students and indicates what proportion of each group is foreign. A subdivision of the institutions, both by type and control, further shows that the private institutions collectively enroll a higher percentage of foreign students than public institutions do. The Pacific region takes pride in supporting the largest system of state universities and their proportion of foreign students is the lowest. On the other hand, the public institutions in the Mid-Atlantic region report the highest percentage of foreign students (66%) enrolled in their doctoral programs. **Table IX** also shows that there are very few private master's institutions and none in the western half of the U.S. that enroll physics graduate students.

Degrees granted

Because the median number of years of graduate study required to complete a physics doctorate has remained between five and six years for over two decades, the trend formed by the sizes of successive classes of entering graduate students has been similar to that of the number of doctorates granted five years later. This information formed part of the data that were utilized in developing the projections shown in **Figure III.** To determine a reasonable rate of attrition during those five-year periods, we needed to take into account the increasingly diversified backgrounds of the doctoral candidates. For example, our considerations included students who enter doctoral programs with advanced standing, those who are transferring from master's to doctoral programs and foreign students who require extra time to become proficient in English. By incorporating all these

Figure III. Actual and projected number of physics doctorates granted, 1982 to 1997.

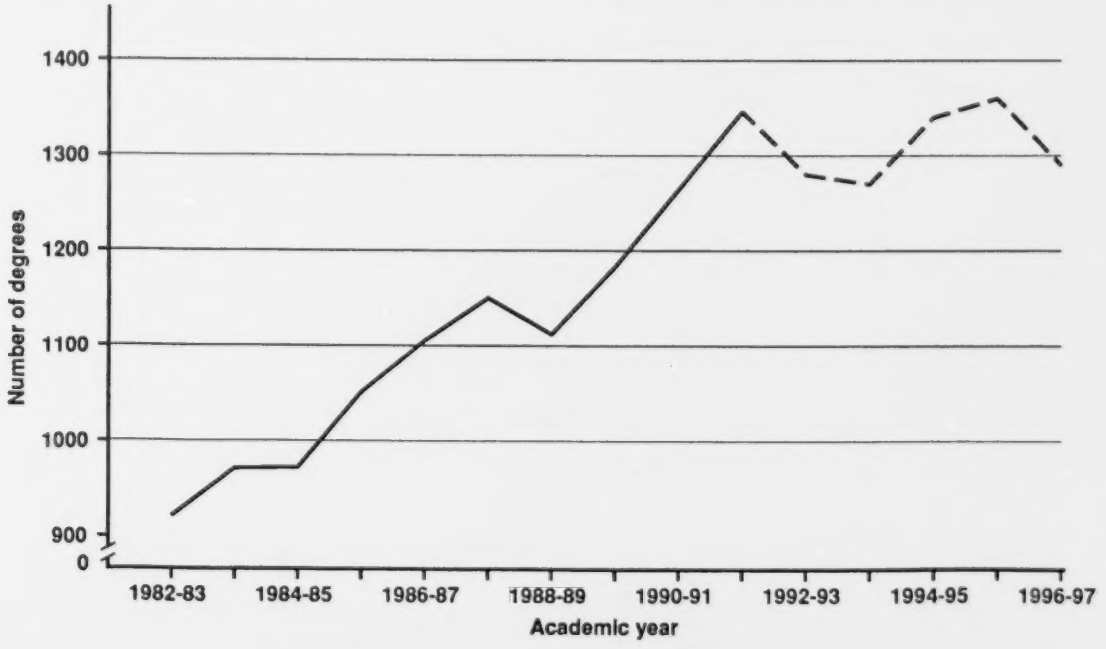

Table X. Physics degrees by type of institution* and geographic region, 1991–92.

Geographic region**	Bachelor's degrees			Master's degree enroute to higher physics degree		Terminal master's degrees		Doctorates
	Institution type			Institution type		Institution type		Institution type
	I	II	III	II	III	II	III	III
New England	128	32	343	15	103	19	50	166
Mid Atlantic	455	37	372	8	203	8	89	228
E. N. Central	358	162	301	30	169	68	92	230
W. N. Central	235	43	131	15	39	18	31	63
S. Atlantic	277	66	287	24	110	27	65	173
E. S. Central	98	50	69	12	47	8	22	41
W. S. Central	134	54	152	24	68	23	42	107
Mountain	90	17	230	9	85	2	39	95
Pacific	292	84	468	17	190	61	88	243
Subtotal	2067	545	2353	154	1014	234	518	1346
Subtotal				1168		752		
Total		4965			1920			1346

* *Institution type indicates the highest physics degree offered; type I = Bachelor's degree, type II = Master's degree, type III = Doctorate.*
***See Table IX for explanation of geographic region.*

factors, **Figure III** projects a fluctuating trend for the number of physics doctorates to be conferred between 1993 and 1997.

Table X presents a geographic distribution of the four types of physics degrees that were granted by three types of institutions in 1991-92. The format of this table includes some detail on transfer students by indicating that the 154 graduates of column four were granted master's degrees enroute to a higher physics degree at institutions that do not offer a doctoral program; all of them transferred to one of the 178 PhD-granting institutions. Terminal master's degrees are primarily granted by the PhD-granting institutions; in 1991-92 the master's institutions conferred only one third of that year's 752 degrees.

In the context of this report, we define minorities as those groups, among U.S. citizens, who are underrepresented in the physics community. Consequently, it is clear from the data in **Table XI** that women form the largest minority group. Of the six ethnic groups identified in this table, we needed to subdivide five of them on the basis of citizenship because the activities of foreign graduates are subject to guidelines that are outlined by their respective visas. According to the above definition, the two Asian groups are not underrepresented. Since these data include several estimates from physics departments, we suggest that they be treated as lower limits. At the doctorate level, foreign Orientals are not only the largest single ethnic group, but their number of degree recipients has quadrupled since 1985.

Table XI. Number of physics degrees granted by sex, minority group* status, and citizenship, 1991–92.

Type of degrees	Sex	Total no. of degrees	Black		Native American Indian	Hispanic		Oriental		Asian Indian		Arab	
			U.S.	Foreign		U.S.	Foreign	U.S.	Foreign	U.S.	Foreign	U.S.	Foreign
Bachelor's	Men	4210	127	11	5	69	8	150	53	45	42	16	15
	Women	755	45	4	3	8	2	29	16	9	6	2	2
	Total	4965	172	15	8	77	10	179	69	54	48	18	17
Master's enroute	Men	1021	18	6	–	16	12	25	244	8	32	1	9
	Women	145	4	–	–	–	2	10	54	–	8	–	–
	Total	1166	22	6	–	16	14	35	298	8	40	1	9
Terminal master's	Men	611	9	2	–	13	6	24	86	4	28	2	8
	Women	141	4	1	–	–	–	3	33	–	9	–	1
	Total	752	13	3	–	13	6	27	119	4	37	2	9
Doctoral	Men	1197	6	6	3	11	16	31	339	5	71	4	20
	Women	149	–	–	–	2	–	5	56	1	17	–	1
	Total	1346	6	6	3	13	16	36	395	6	88	4	21

**Minorities in AIP surveys are defined as groups with a low representation in the physics community, but one whose participation has aroused considerable interest.*

ASTRONOMY

Table XII. Trend in astronomy enrollments* and degrees, 1983 to 1993.

Academic year	No. of astronomy degrees granted (July 1 to June 30)				Undergraduate astronomy major enrollments		Graduate astronomy enrollments	
	Bachelor's	Master's enroute	Terminal master's	Doctor's	Juniors	Seniors	Total	1st year
1983–84	137	51	22	74	242	217	688	154
1984–85	145	56	16	66	239	212	716	151
1985–86	169	61	24	86	232	252	711	170
1986–87	172	38	23	72	268	255	755	173
1987–88	181	51	24	94	250	285	731	171
1988–89	196	77	16	94	213	275	780	169
1989–90	176	77	17	89	223	200	842	186
1990–91	200	65	25	73	312	218	880	192
1991–92	186	83	28	93	290	268	901	175
1992–93					337	304	905	173

**Includes part-time students.*

Compared with physics, the number of astronomy degree-granting departments is small; hence their response to our requests for enrollment and degree data continues to be 100%. A ten-year trend of these data is shown in **Table XII,** which reflects a gradually rising graduate student population. It should be noted that some of the astrophysics students, though not counted twice, are included with the physics data.

Astronomy departments are divided into two groups, 38 separate ones and 30 that are combined with physics departments. Details of their respective roles in educating astronomers, are shown in **Table XIII.** But at the introductory level, the 68 astronomy departments account for only one third of the enrollment in those freshman and sophomore level courses. Over one hundred thousand students each year take an introductory astronomy course in a physics department.

This report was prepared with the help of Thomas N. Stovall.

Table XIII. Astronomy enrollments* 1992–93 and degrees 1991–92 by type of institution.

		Bachelor's-granting		Master's-granting		Doctoral-granting		Total
Type of astronomy department		Comb. dep'ts.	Sep. dep'ts.	Comb. dep'ts.	Sep. dep'ts.	Comb. dep'ts.	Sep. dep'ts.	
Number of dep'ts.**		17	6	2	2	11	30	68
Astronomy degrees	Bachelor's	27	14	2	6	11	126	186
	Master's enroute	–	–	–	3	10	70	83
	Terminal master's	–	–	3	5	3	17	28
	Doctor's	–	–	–	–	4	89	93
Astronomy enrollments	Annual intro. enrollments in astronomy dep'ts.	7007	1920	1078	1585	5152	43 075	59 817
	Annual enrollments of intro. astronomy taught in physics dep'ts.	43 519		21 632		37 771		102 922
	Total							162 739
	Junior astronomy majors	50	23	6	15	16	227	337
	Senior astronomy majors	63	14	7	10	11	199	304
	Fifth-year undergraduates	2	–	–	2	–	40	44
	First-year graduate students US	–	–	4	9	20	90	123
	First-year graduate students Foreign	–	–	–	–	4	46	50
	Total graduate students US	–	–	5	25	89	528	647
	Total graduate students Foreign	–	–	3	–	34	221	258

* *Includes part-time students.*
** *This survey includes only degree-granting astronomy departments.*